

REMARKS

Initially, Applicants would like to express their appreciation to Examiner Corsaro for the courtesies extended to Applicants' attorney during a telephone interview on April 22, 2004. Although agreement was not reached on whether Applicants' claim 1 overcame the cited references, Examiner Corsaro did agree to take more points into consideration during his review.

After the foregoing response, claims 1, 2, 4, 6-17, 19-25, 28-38, and 40-43 are pending in the application.

Applicants respectfully request additional consideration and review of the claims in view of the following remarks.

Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1, 2, 4, 6-8, 10-15, 17, 19-25, 28-33, and 40-43 under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of various other references.

Applicants respectfully submit that even if it were obvious to combine Kanai and the other references in the manner suggested in the Final Office Action, the resulting combinations would not embody Applicants' inventive teachings nor anticipate Applicants' claims.

As stated in the previous amendment, one potential use of Applicants' claimed invention is to provide a method of power control for the reverse link outer loop in wireless communications networks. An important aspect of Applicants' claimed invention is to perform power control as a function of a second order statistic of a signal-to-noise ratio of a received signal. This important aspect of Applicants' claimed invention is pointed out, for example, in independent claim 1 that calls for determining a signature of a communications channel in which "the signature of the communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel, ... performing power control ...". See, for example, page 3, lines 7-13 in Applicants' specification where this aspect of the invention is discussed.

Claim Rejections under Kanai and Minde

Claims 1, 2, 4, 6, 11-13, 17, 19-20, 23-25, 29, 31, 38, 40, and 43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai (U.S. 5,386,589) in view of Minde et al. (U.S. 6,201,960). Kanai, like Applicants, is generally concerned with power control in a wireless network. In Kanai, transmission power is controlled by measuring the average bit error rate or a carrier to interference ratio and comparing either parameter to predetermined thresholds. Transmission power is increased or decreased by a predetermined amount based on how the average bit error rate or carrier to interference ratio compares to the predetermined thresholds.

Minde provides a method and system of measuring signal quality in mobile telecommunications networks. Minde teaches the processing of radio link parameters such as bit error rate, frame error rate, receive level, etc., via a temporal processing stage and a correlation processing stage as a first step in determining speech quality. (See FIG. 2) Minde discloses the use of statistical methods “which may include determining the maximum value, minimum value, mean value, standard deviation, skewness, kurtosis, etc.”, to analyze the radio link parameters in the temporal processing stage, as pointed out in column 4, lines 37-40. Minde then combines the original radio link parameters or the new “analyzed” parameters in the correlation processing stage to produce parameters more correlated to speech quality.

Next, Minde discloses a speech processing stage and a method of objective speech quality measurement. (See FIG. 3 & FIG. 4) Both occur separate from the radio link processing stages’ temporal processing and correlation processing components. Objective measurement techniques perform quality measurements on the signal by determining the waveform, spectral, and spectral envelop distortions, as pointed out in column 5, lines 40-43. Minde discloses that the signal-to-noise ratio can be adapted for such measurements in the speech processing stage.

Finally, the output from radio link processing and speech processing stages are input to an Estimator that calculates speech quality. (See FIG. 5)

In the Final Office Action, the Examiner contends that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the power control from Kanai with Minde's teachings of statistics being applied to temporal processing parameters. Applicants assert, however, that even if the cited references could be combined, the resulting combination would not embody Applicants' inventive teachings nor anticipate Applicants' claims.

First, as noted by the Examiner in the Final Office Action, Kanai does not specifically disclose using a second order statistic of a signal-to-noise ratio. This distinction alone is sufficient to distinguish Applicants' claimed invention from Kanai.

Second, the Examiner has asserted that Minde discloses the use of a second order statistic of a signal-to-noise ratio. Applicants respectfully disagree. Minde does not disclose using a second order statistic of a signal-to-noise ratio. As noted above, Minde discloses the use of several statistical methods in the temporal processing stage; however, signal-to-noise ratio is not disclosed as a parameter in the temporal processing stage. Minde only discloses that a signal-to-noise ratio could be adapted as an objective measurement technique, which occurs in the speech processing stage, which is separate from the temporal processing stage. (See FIG. 2 & FIG. 5) As such, Minde does not disclose the use of second order statistics on the signal-to-noise ratio in any of the stages. Even assuming that the signal exiting the temporal processing stage is a "signature of the communications channel", the fact remains that contrary to Applicants' claim 1, Minde does not teach that "the signature of the communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel". This distinction alone is sufficient to distinguish Applicants' claimed invention from Minde and, in view of this distinction, the teachings in Minde therefore do not cure the deficiency noted above for the Kanai reference.

Combining Kanai with Minde therefore would not embody Applicants' claimed invention. As noted above, Applicants' claim 1 calls for determining a signature of a communications channel in which "the signature of the

communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel". This limitation in Applicants' claim 1 means that 1) a signal is received, 2) a signal-to-noise ratio of the received signal is determined, 3) a second order statistic of the signal-to-noise ratio is determined, and 4) the result is the signature of the communications channel. Neither Kanai nor Minde teach, either when taken individually or in combination, that "the signature of the communications channel is a second order statistic of a signal-to-noise ratio of a signal received from the communications channel". This distinction alone is sufficient to distinguish Applicants' claims 1 from the combination of Kanai and Minde.

In view of the foregoing, claim 1 is believed to be patentable over the combination of Kanai and Minde. Since claims 2, 4, and 6 depend from claim 1, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1. Therefore, the Kanai and Minde combination does not embody Applicants' claims 2, 4, and 6.

Independent claim 11 has a limitation similar to that in independent claim 1. Claim 11's limitation calls for "developing a second order statistic from the received signal based on a signal-to-noise ratio of the received signal". The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons. Since claims 12-13 depend from claim 11, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1. Therefore, the combination of Kanai and Minde does not embody Applicants' claims 11-13.

Independent claim 17 has a limitation similar to that in independent claim 1. Claim 17's limitation calls for "measuring a signature of a fading environment, wherein the measuring includes calculating a standard deviation value of a signal-to-noise ratio of a received signal". The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons. Since claims 19, 20, and 23 depend from claim 17, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for

independent claim 1. Therefore, the combination of Kanai and Minde does not embody Applicants' claims 17, 19, 20, and 23.

Independent claim 24 has a limitation similar to that in independent claim 1. Claim 24's limitation calls for "wherein the controller further determines the signature of the communications channel by collecting signal-to-noise ratio values of the received signal and by calculating a second order statistic of the collected signal-to-noise ratio values". The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons. Since claims 25, 29, and 31 depend from claim 24, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1. Therefore, the combination of Kanai and Minde does not embody Applicants' claims 24, 25, 29, and 31.

Independent claim 38 has a limitation similar to that in independent claim 1. Claim 38's limitation calls for "a controller for (a) developing a second order statistic from the received signal, wherein the controller calculates the second order statistic of collected signal-to-noise ratio values of the received signal". The Kanai and Minde combination does not teach or suggest this limitation for the above-mentioned reasons. Since claims 40 and 43 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1. Therefore, the combination of Kanai and Minde does not embody Applicants' claims 38, 40, and 43.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 1, 2, 4, 6, 11-13, 17, 19-20, 23-25, 29, 31, 38, 40, and 43.

Claim Rejections under Kanai, Minde, and Wang

Claims 7-8, 10, 14-15, 28, 32-33, and 41-42 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai in view of Minde, and further in view of Wang et al. (U.S. 6,084,904). The Kanai and Minde combination does not teach or suggest the limitations recited in Applicants' independent claims 1, 11, 17, 24, and 38 for the above-mentioned reasons.

Wang does not cure the deficiencies noted above for Kanai and Minde. Since claims 7-8 and 10 depend from claim 1, claims 14-15 depend from claim 11, claims 28 and 32-33 depend from claim 24, and claims 41-42 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Kanai, Minde and Wang still does not embody Applicants' claims 7-8, 10, 14-15, 28, 32-33, and 41-42.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 7-8, 10, 14-15, 28, 32-33, and 41-42.

Furthermore, Applicants respectfully object to the Examiner taking official notice as per claim 28. Applicants' method of power control for the reverse link outer loop in wireless communications networks is not common knowledge nor is it practiced in the art. Applicants respectfully submit that a reference document should be cited that shows prior art as the basis for the rejection of Applicants' claim.

Claim Rejections under Kanai, Minde, and Dohi

Claims 21, 22, and 30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kanai in view of Minde, and further in view of Dohi et al. (U.S. 6,341,224). The Kanai and Minde combination does not teach or suggest the limitations recited in Applicants' independent claims 1, 11, 17, 24, and 38 for the above-mentioned reasons. Dohi does not cure the deficiencies noted above for Kanai and Minde. Since claims 21-22 depend from claim 17 and claim 30 depends from claim 24, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Kanai, Minde and Dohi still does not embody Applicants' claims 21, 22, and 30.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 21, 22, and 30.

Allowed Claims

Applicants appreciate the Examiner's allowance of claims 34-37 and indication that claims 9 and 16 would be allowable if rewritten in independent form including all limitations of the respective base and intervening claims.

Instead of rewriting claims 9 and 16 in independent form, Applicants have opted instead to amend respective base claims 1 and 11. Claims 1 and 11 are now believed to include the allowable subject matter as previously discussed. In view of the amendments to the base claims and the accompanying remarks set forth herein, Applicants believe that claims 9 and 16 are allowable in their present form by virtue of their dependency from the amended base claims. As such, for reasons related to prosecution efficiency, Applicants have not amended these dependent claims at the present time, but instead would prefer to reserve the right to do so in the future as appropriate.

Conclusion

In view of the foregoing remarks, Applicants submit that claims 1, 2, 4, 6-17, 19-25, 28-38, and 40-43 are in condition for allowance, and reconsideration is therefore respectfully requested. If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is invited to contact the undersigned to resolve the issues.

Respectfully submitted,

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Date 4/30/04

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